Compton Gamma Ray Observatory Model

Materials and Tools

Sharp paper scissors
Razor blade knife
Dull knife
Straight edge
Sharp punch (such as an ice pick or nail)
Glue stick or rubber cement
Cellophane tape
Cutting surface (such as a wooden board)
Silver paint or gray, yellow, and blue marker pens
Dowel rod (1/16-inch diameter)
Two Ping-Pong balls

General Assembly Tips

- Copy all model pieces on heavy weight paper.
- Color all pieces as indicated before cutting any parts out.
- Cut out only those pieces needed for the section being assembled at the time.
- Use a cutting surface such as a wooden board to protect the table or desk from scratches or gouges.
- Cut out pieces along the solid exterior lines.
- Using the dull knife, lightly score all dashed fold lines to make accurate folds possible.
- Apply glue to the insertion tabs on the pieces and flaps where the slots are located. If using rubber cement, apply cement to both surfaces to be joined, and permit them to dry before assembling. Using a double coating of rubber cement makes a stronger bond. After the pieces are assembled, lightly rub pieces to remove excess cement.
- Some pieces may require small holes to be punched through them. These places are indicated with the ⊕ symbol.

#1 Assembling the Bus

1. Be sure to punch out the holes for the SOLAR ARRAY rod out of the side of the BUS (look for the two ⊕ symbols), and cut out the holes for the OSSE, COMPTEL, and EGRET.
2. This component is easiest to assemble by joining edge A to edge B. Follow with the assembly of the other sides.
3. Try to keep the joints square at all times, and smooth out any curves that might be produced.

#2 Assembling the Propellant Tanks

1. After forming the PROPELLANT TANKS, slip the four assembly tabs into the four slots in the bottom of the BUS. The notched end of the piece should be aligned with the OSSE end of the model. The ANTENNA rod will slide through this notch.

#3 Assembling the OSSE

1. Punch out the two holes indicated in the OSSE cradle. (Look for the ⊕.)
2. Begin joining each cradle by inserting tabs into the corresponding slots nearest the center folds. Work your way toward the upper end of the “U” shape.
3. Slide the cradles into their proper positions on the BUS. To make this easier, bend the assembly tabs upward, and gently push them into the corresponding slots. The tip of the razor blade knife can be used to assist in the insertion.
4. To provide extra strength to the model, glue the surfaces of the cradles and the PROPELLANT TANKS that touch together.
5. It is easiest to assemble the OSSE by folding around the curved side pieces before folding in the bottom.

#4 Assembling the COMPTEL and EGRET

1. After joining each cylinder, glue and insert a Ping-Pong ball into the upper end of each. The Ping-Pong balls should form a dome at the upper end of each cylinder.
2. Insert the EGRET cylinder into the model first. Use a short piece of cellophane tape to anchor it in place. Insert the tape through the COMPTEL hole. Next, insert the COMPTEL cylinder. Bend the assembly tabs on the BUS upward, and slip them into the cylinder slots as it is pushed downward. For a better looking model, have the cylinder seams face each other.

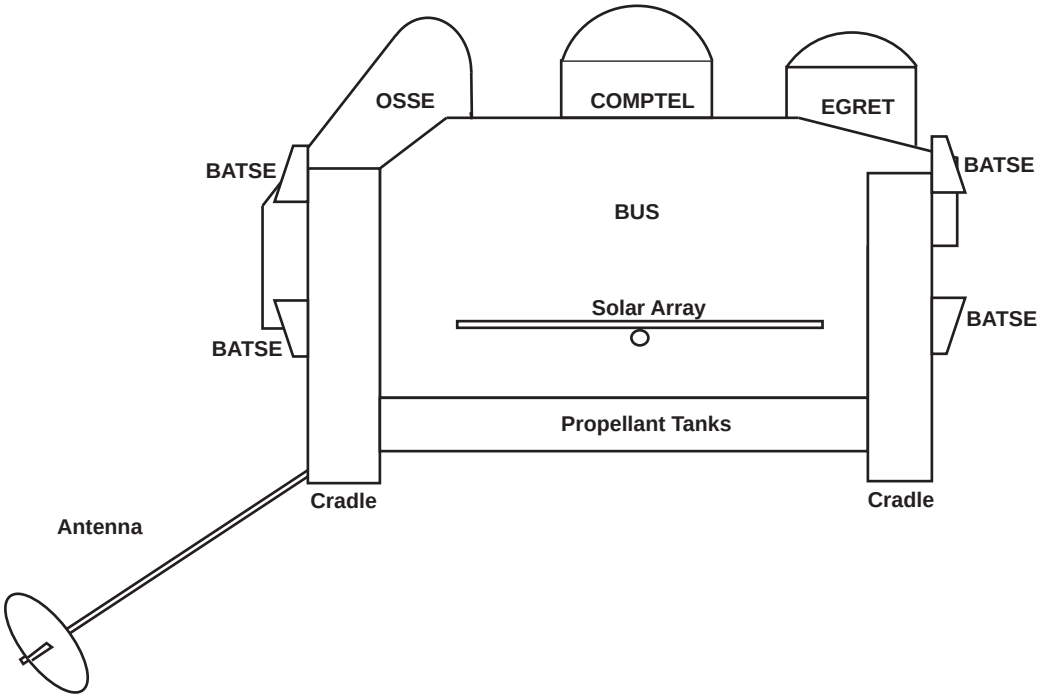
#5 Assembling the BATSE

1. Score the fold lines before cutting out the pieces. After making all eight BATSE pieces, glue each to the model in the places indicated in the completed model diagram.

#6 Assembling the Solar Arrays

1. Be sure to punch the holes indicated in each array before cutting them out. (Look for the ⊕.)
2. Coat the back side of each array with glue, and fold them together along the dashed fold lines.
3. Cut one piece of dowel rod 45-centimeters long.
4. Slip the rod through the holes in the BUS.
5. Carefully slide one array onto each end of the rod. The rod is inserted through the holes cut open in step 6-1.

COMPLETED MODEL

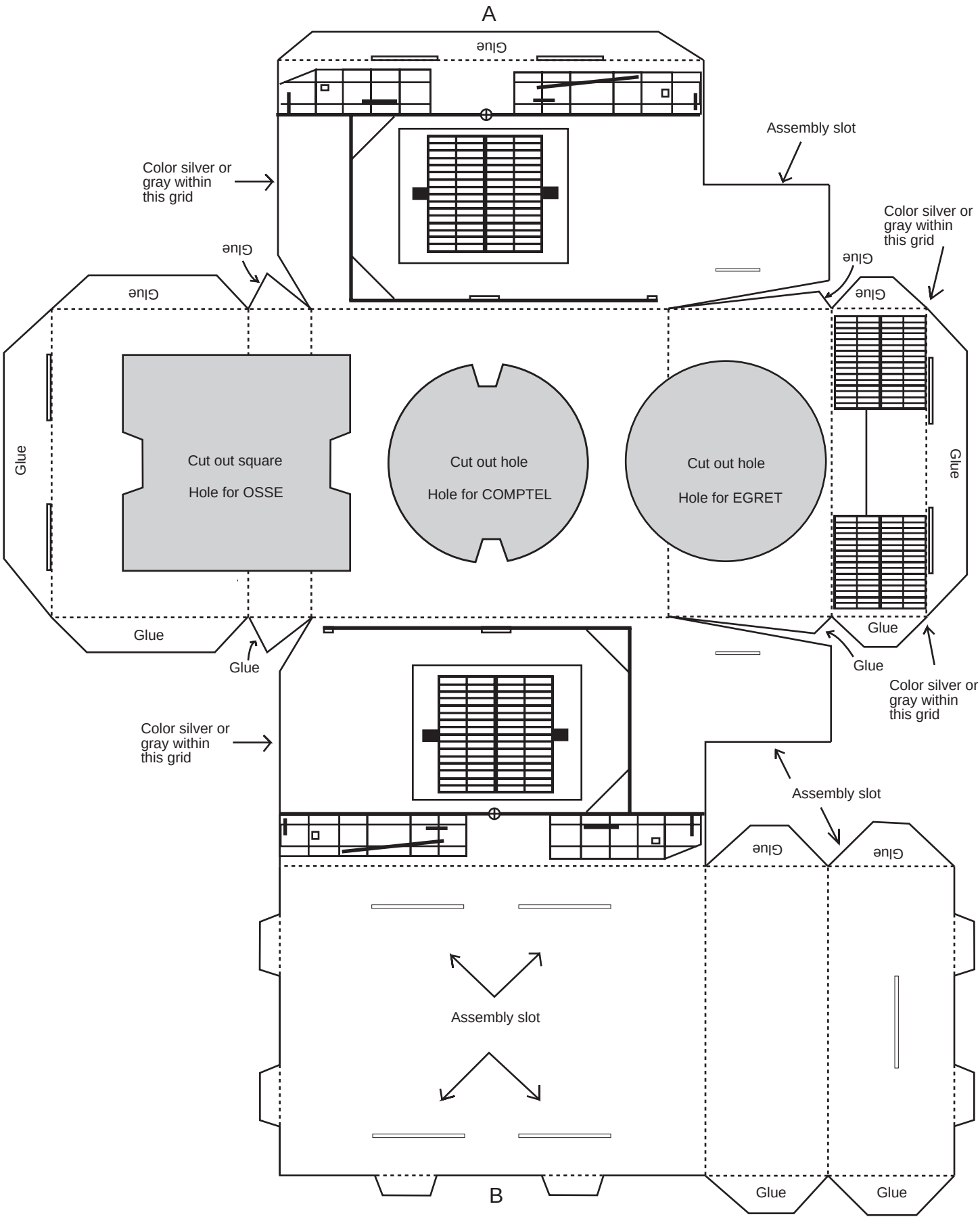


#7 Assembling the ANTENNA

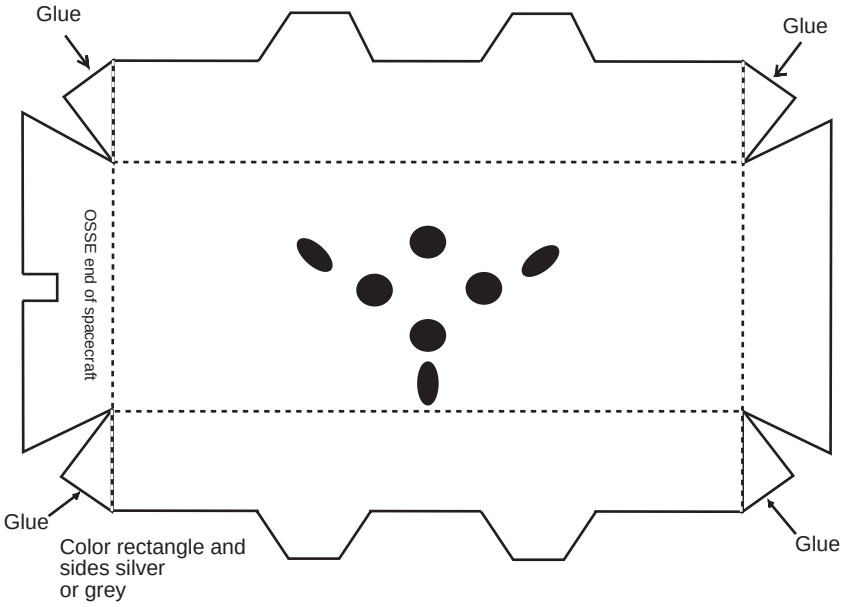
1. Cut out both forms. Be sure to punch the holes first. (Look for the ⊕.)
2. Curl and glue the large form onto itself to form a shallow cone. Hold this piece together until the glue starts drying.
3. Coat the inside of the center of the cone and the back side of the smaller circle with glue. When dry, press the smaller circle into the center of the cone.
4. Cut a 14-centimeter piece from the remaining dowel rod. Slide the ANTENNA onto one end of the rod. Slip the other end of the rod through the holes in the bottom of the cradle on the OSSE end of the spacecraft.

The NASA Compton Gamma Ray Observatory model is now complete. You can display it by suspending it from the ceiling by a piece of thread or monofilament fishing line or by creating a base for it.

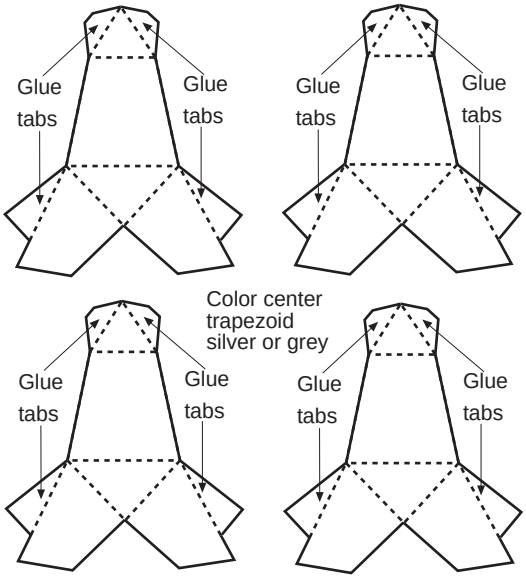
SPACECRAFT MODULE



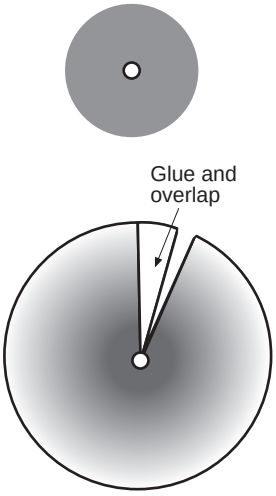
PROPELLANT TANKS



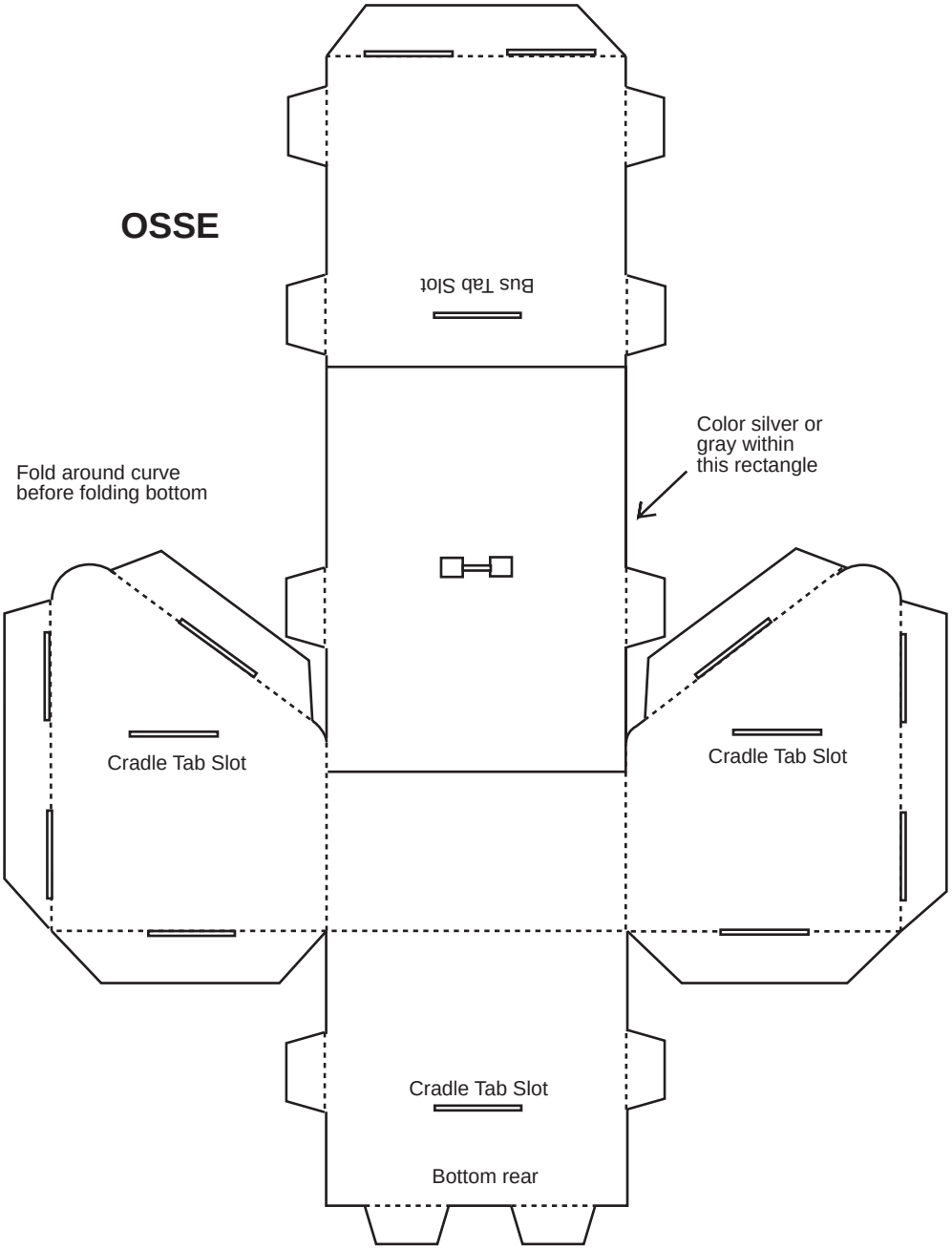
BATSE



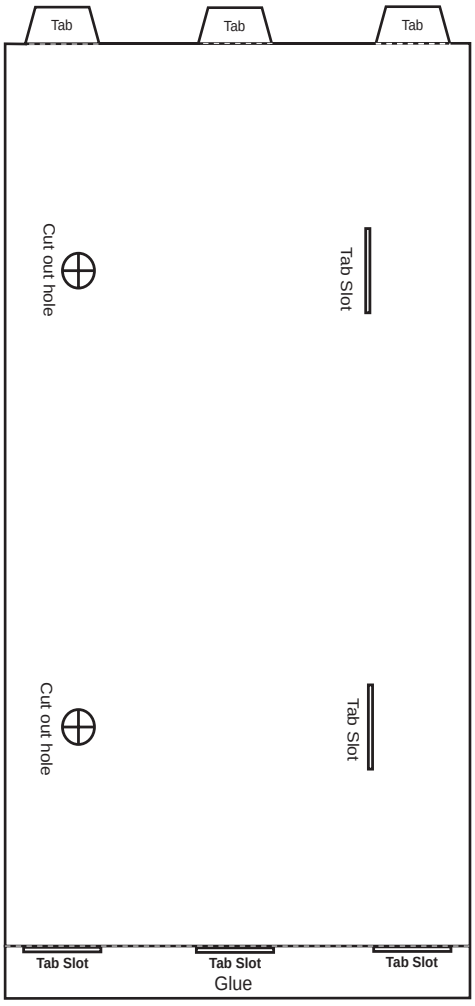
ANTENNA



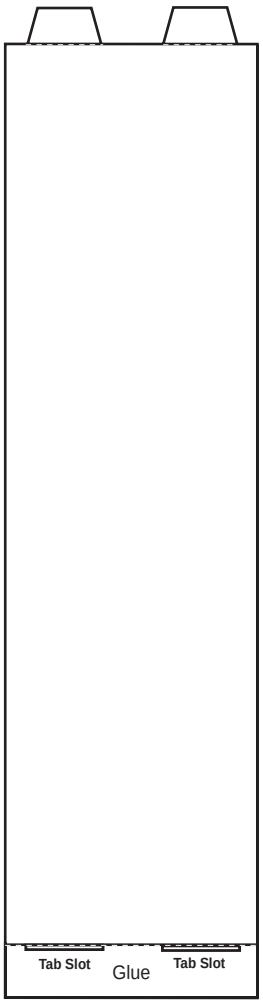
OSSE

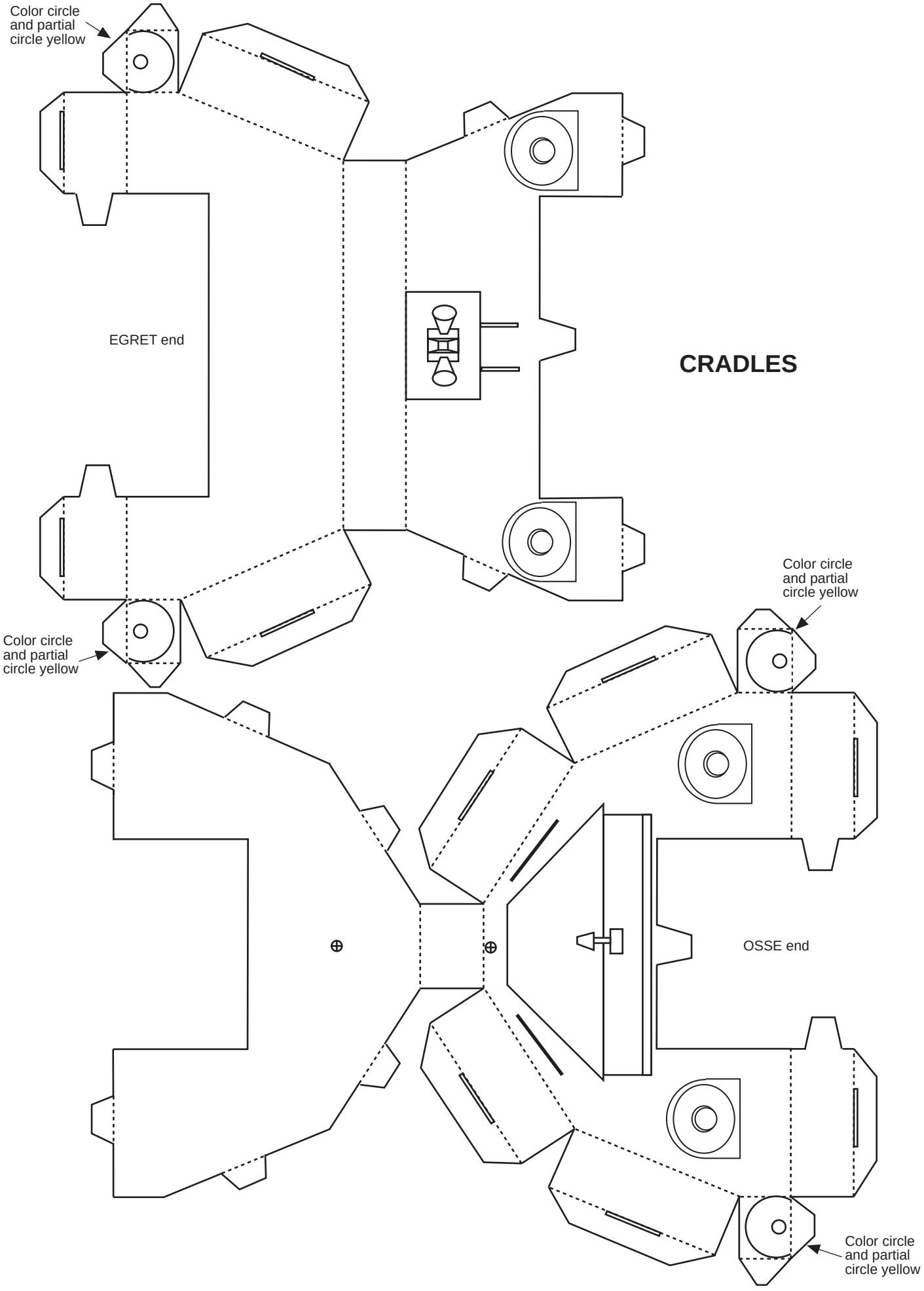

Bus Tab Slot
Color silver or
gray within
this rectangle
Fold around curve
before folding bottom
Cradle Tab Slot
Cradle Tab Slot
Cradle Tab Slot
Bottom rear

COMPTEL



EGRET




Color circle and partial circle yellow
EGRET end
CRADLES
Color circle and partial circle yellow
Color circle and partial circle yellow
OSSE end
Color circle and partial circle yellow

SOLAR ARRAYS